

1 SYSTEM AND METHOD FOR USER NAVIGATION

CROSS-REFERENCE TO RELATED APPLICATIONS

5 This application claims the benefit of U.S. Provisional Application No. 60/161,860, filed October 27, 1999, the disclosure of which is incorporated by reference.

BACKGROUND OF THE INVENTION

10 This invention relates generally to navigation assistance devices, and more particularly to personalized computer-based electronic navigation devices.

Individual computers and computerized devices are able to store large amounts of information. With the advent of the Internet and the World Wide Web, a single computer may access
15 information stored in a number physically separated computers using the Internet. With the proliferation of use of the Internet, numerous people, organizations, and entities have made information available to computer users. Many individuals have their own Web pages, and use their Web pages to present
20 information of interest to them. Many organizations and entities similarly have Web pages describing their organization, purpose, and other information. Thus, individuals are able to access information about a variety of topics, presented by a variety of individuals and entities.

25 In addition, businesses are often supplementing this physical presence by placing information about their goods, services and products on the Web. Indeed many such businesses are solely Web-based. That is, some businesses may not provide a physical location which a customer or shopper may visit, but
30 instead merely provide a presence on the Web for consumers to access via the Internet. Many businesses, however, combine a physical presence, such as a store site, with information about the store on the Web. Thus, computer users can determine the products, pricing, and other information relating to a store on

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1 the Web, and determine whether the consumer is interested in
visiting the store and thereafter visiting the store.

Often the consumer is assisted in visiting the physical
location of a store by receiving instructions over the Web as to
5 how to, for example, drive to the location. Mapping services
available from the Web, upon input of a desired destination and
a current location, provide driving instructions as to how to get
from a current destination to a desired location. Thus, it would
appear that the Web provides a convenient way to learn about
10 physical locations, such as stores, and how to get to those
locations.

As discussed above, the amount of information available over
the Web, is tremendous. The sheer quantity of data available,
however, also increases the difficulty in finding data desired
15 by a consumer. Determining which data meets the needs of the
consumer, as well as convenient presentation of such data,
provides difficulties. Moreover, even for categories of
information which appear to fit a consumer's need, some otherwise
relevant data may not be desired by the consumer. For example,
20 for certain types of goods a consumer may not wish to frequent
a particular establishment, or desire to only frequent a few of
a large number of establishments. Thus, a consumer may be
presented with data from establishments the consumer has no
desire to visit, and such information merely clutters the user's
25 ability to rapidly locate information of interest.

Further, any one consumer may have a variety of interests.
Such a consumer may not wish the information relevant to one
aspect of the consumer's activities cluttering up requests for
information regarding other aspects of the user's activities.

30 In addition, businesses desiring to place information
regarding their business before certain types of consumers have
no convenient way to do so. Businesses do not desire to place
information before consumers who have no interest in their
business, and that do wish to place information regarding their

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1 business before consumers who do or are likely to have an
interest in the goods the business provides.

In addition, although consumers may be provided information
on how to get to a business, while enroute the consumers receive
5 no additional information about points of interest which they may
be passing. In addition, consumers may realize, while in route,
that they have a need to obtain other goods or services along the
route. Such consumers may not have detailed information
concerning their present location, and no convenient means to
10 determine the availability of businesses stocking goods which
they desire or need enroute, or how to reach such businesses.

SUMMARY OF THE INVENTION

In one aspect, the present invention provides a real world
15 navigation system. In one embodiment the invention comprises a
method of populating a database, including determining a tag
location, requesting information concerning the tag location and
providing the information to a computer system. In one
embodiment determining the tag location comprises evaluating the
20 position of a GPS capable device, waiting a preselected time
period, reevaluating the position of the GPS capable device, and
determining if the position has changed. In another embodiment,
determining the tag location comprises presenting a map display
using a computer to a user and receiving a selected position on
25 the map display.

In alternative embodiments the tag location comprises a
plurality of locations, and in one embodiment these locations are
selected area and in another embodiment the locations are a route
to a destination.

30 In other embodiments, the invention comprises a method of
accessing a database using a profile. The profile comprises
information applicable to a user, and serves as a filter between
the database of information and the display to the user. In
other embodiments, the profile is used in a push mode to push
35 information desired by the user to the user, in other embodiments

1 the profile serves as a filter in a pull mode pulling only
information applicable to the user to the user.

In yet another embodiment the invention comprises an
entertainment distribution system. The entertainment distribution
5 system comprises an entertainment server receiving entertainment
related computer files in a variety of formats. The entertainment
computer related files are sequenced and organized by a user, and
may thereafter request from requesting nodes various files or
sequences of files in a format applicable to their requesting
10 node.

These and other aspects of the present invention will be
more readily understood when considered in connection with the
drawings and the following detailed description.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a block diagram of a system of the
present invention;

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FIG. 2A illustrates a block diagram showing user interaction
with a database of the present invention;

FIG. 2B illustrates a block diagram of an embodiment of a
database of FIG. 2A;

FIG. 3 illustrates a flow diagram of a process of forming
profiles to interact with the database of FIG. 2;

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FIG. 4 illustrates a flow diagram of a process of creating
profiles;

FIG. 5 illustrates an input screen for creating a profile;

FIG. 6 illustrates an input screen for selecting a default
profile;

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FIG. 7 illustrates an input screen for cloning a profile;

FIG. 8 illustrates input screen for editing a profile;

FIG. 9 illustrates a flow diagram of a process for
populating a database;

FIG. 10 illustrates a navigation screen;

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FIG. 11 illustrates a roadblocks screen;

- 1 FIG. 12 illustrates an enroute profile settings screen;
 FIG. 13 illustrates a tag location screen;
 FIG. 14 illustrates a block diagram of an entertainment
distribution system; and
5 FIG. 15 illustrates a process conducted by the entertainment
distribution system of FIG. 14.

DETAILED DESCRIPTION

10 FIG. 1 illustrates a block diagram of a system of the
present invention. An Internet service provider (ISP) 11,
including a server, is linked to a user personal computer 13 via
telephone lines 15. In actuality, one or more computer units may
be interdisposed between the PC and the server, with the server
being a node on the Internet. The server is also connected via
15 communication link to a personal computer device 17. Circuitry
to allow the PCD, sometimes in conjunction with external elements
or computers, to determine the position of the PCD. For example,
in one embodiment the PCD contains circuitry for receiving GPS
signals and passing pertinent representations of the received
20 signals to a base server for further processing. The base
server, in turn, calculates the position of the PCD and transmits
the position information to the PCD. Alternatively, the PCD
contains a GPS receiver and processing system, and the PCD
determines its position using the GPS receiver and processing
25 system. In one embodiment, the personal computer device is a PCD
of the type disclosed in U.S. Patent Application No. 08/879,955,
the disclosure of which is incorporated herein by reference.

 The server includes a database. The database includes
information pertaining to a variety of topics. More specifically,
30 in one embodiment the database includes information relating to
locations. That is, the database includes information regarding
specific locations, as well as information pertaining to
transportation to and from these locations.

 The information in the database is provided by businesses,
35 individuals, and users of PCDs. Thus, the database contains

1 general information provided by businesses, stores, and other
commercial entities who wish to make information concerning their
business available to others. The database also contains
personalized information regarding points of interest and other
5 matters provided by users of PCDs. The database therefore
provides a source of information to the users of PCDs.

In accordance with the present invention, therefore, users
are provided profiles to assist on the search of the database.
This is shown in block diagram form in FIG. 2A. As illustrated
10 in FIG. 2A, a first user 31 accesses a database 33 using a first
profile 35. The profile includes information pertaining to the
user. For example, the profile may contain information relating
to restaurants the user prefers, businesses the user prefers to
frequent, locations that the user desires to reach, or routes the
15 user has marked an interest or other matters.

In effect, the profile serves as a filter between the
database and the user. The information retrieved from the
database that the users request is provided to the user based on
aspects the user has entered into the profile.

20 The user may utilize more than one profile. This is
illustrated by a second user 37. The second user accesses the
database using a second profile 36 and a third profile 41. The
second profile is similar to the first profile in that the second
profile contains information pertaining to the specific user. The
25 third profile differs in that the third profile is a standard
profile. In other words, the third profile is a standardized
profile made available for selection by users so that users may
avoid the necessity of creating their own profile.

The use of multiple profiles is beneficial in that users
30 may, depending on their activities, require different information
of a different nature at different times. For example, a user may
desire information of a first type relating to the users business
activities. This may be due to the user working at a locale,
with the result that the user desires information pertaining to
35 the region of the locale while at work. In addition, the user

1 may frequent certain types of businesses as part of work related activities, whereas the user may frequent different types of businesses during the user's leisure hours.

In addition, profiles may be copied. Copying of profiles is beneficial as the copied profile may be thereafter edited or added to, or have other operations under the profile. A user having a copied profile is illustrated by a third user 41. The third user accesses the database using a fourth profile 47, a fifth profile 45 and a copied sixth profile 43. The fourth and fifth profiles are, like the profiles of the first and second users, profiles pertaining to the individual user. The copied sixth profile of the third user is a copied version of the fifth profile. When created, therefore, the sixth profile is merely a copy of the fifth profile. Over time, however, the user may adjust and adapt the copied profile to suit other needs. This allows the user to use the information contained in the original profile, but allows modification to meet specific needs of the user.

FIG. 2B illustrates a data layout of one implementation of a database in accordance with the present invention. The database 21 includes plurality of memory elements. The plurality of memory elements includes subgroupings of memory elements. A three such subgrouping of memory elements are illustrated as a first subgrouping 23, a second subgrouping 25, and a third subgrouping 27. As illustrated in FIG. 2B, the first, second, and third subgroupings of memory correspond to areas of memory reserved for information for the first profile, second profile, and third profiles illustrated in FIG. 2A. Thus, in the embodiment illustrated in FIG. 2B, data is stored separately for each profile. Thus, the profiles serve as a filter into a database, namely, information relevant to a users profile is placed into the database at the request of the user. A request by the user in one embodiment includes implied requests based on profile settings provided by the user. Thus, if the user, for example, has indicated a particular store as a favorite, information

1 regarding the store may be placed in the user's profiles section
of the database without an explicit command by the user.

In an alternate embodiment, the database is more
conventionally set up in which a record for each data element
5 indicates whether the data item is applicable to a particular
profile. In further embodiments of the database, data is sorted
in real time based on user profile requests, and no explicit link
between the profile and the data in the database is provided
except upon a request.

10 FIG. 3 illustrates a flow diagram of a process of creating
and populating a profile. In Block 61 the user creates a
profile. As discussed above, the profile may be a user specific
profile, a standard profile, or a copied profile. In Block 63 the
user populates the profile. Populating the profile is analogous
15 to populating a database linked to the profile. Indeed, in one
embodiment of the invention populating the profile is population
of a unique database linked to the profile. In other
embodiments, however, populating the profile involves linking
information in a database to the profile, as well as, in some
20 embodiments, providing information to the database.

FIG. 4 illustrates details of a flow diagram of a process
of creating a profile. In Block 101 the user selects a type of
profile. The user may select a new profile, a preselected
profile, a clone profile, or edit of an existing profile. If the
25 user selects a new profile the process displays a create new
profile screen in Block 102. The create new profile screen is
illustrated in FIG. 5. As illustrated in FIG. 5, the create new
profile screen includes data entry regions for personal data 51,
data entry areas for enroute profiles 53, and data entry areas
30 for favorites 55. Accordingly, in Block 103 of the process of
FIG. 4, the user enters personal data information requested by
the create new profile screen. The personal data includes a
profile name, the age of the user, the sex of the user, and the
marital status of the user. The personal data additionally

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1 includes the occupation of the user, the city of the user, as well as the user's education, religion and children.

In Block 105 the user enters enroute data. The enroute data includes information relating to music, entertainment, sports, services, restaurants, and shopping. In Block 107 the user enters information regarding the users favorites.

If, however, the user selects a preselected profile in Block 101, then in Block 111 the process displays a list of default profiles. The default profiles are profiles for which data has previously been provided. In one embodiment, the data for the default profile is standardized based on age group and sender. For example, college age males have one default profile with standardized information, and male senior citizens have a different default profile with different standardized information. In Block 113 the user selects a default profile.

If in Block 101 the user selects a clone type profile, in Block 121 the process displays a list of existing profiles. FIG. 6 illustrates a screen showing existing profiles for a user. As illustrated, the user has five profiles. The profiles include a default profile 60, an entertainment profile 62, a business profile 64, a shopping profile 66, and a vacation profile 68. For each of the profiles, the user is provided a choice of editing the profile via an edit button or cloning the profile via a clone button.

FIG. 7 illustrates a clone profile screen. The clone profile screen allows for data entry of the profile name 80 and user information 82, as well as modification of the enroute profile 84 and favorites 86. Thus, a clone profile is a copy of a preexisting profile, which may be then edited.

Similarly, FIG. 8 illustrates the result of selecting the edit button of the screen of FIG. 6. As with the clone profile of FIG. 7, via the profile screen allows for edit of the profile information 90, the enroute profile 92, and favorites 94.

FIG. 9 illustrates a flow chart of a process for populating a database. In Block 901 the process determines the method to

1 be used in populating the database. The database may be populated either based on locations at which the PCD becomes relatively immobile, through selection of a route, or through selection of an area.

5 If the stop, or mobility, method is selected the process proceeds to Block 903. In Block 903 the process determines if the PCD has stopped. The PCD is determined to have stopped if the PCD has moved over 500 feet within the past two minutes, but has moved less than 50 feet in the past minute. If the PCD has
10 stopped the process in Block 905 determines the position, in one embodiment the latitude and longitude, of the stop location and transmits the position to the server. The server in turn responds with an indication of the address of the stop location, as well as any identifying information regarding that address such as
15 phone number, name of business, or other pertinent information. In addition, optionally the process provides an input screen to allow the user to enter additional information. An example input screen is illustrated in FIG. 13. The input screen includes a name field 1301, and add information button 1303, and a tag
20 button 1365. Once the information has been either received from the server and/or input by the user, the PCD places a request with the server in response to selection of the tag button to store the information in the user's personal database. The process thereafter returns.

25 If in Block 901 the process determines that the select route method has been selected the process proceeds to Block 907. In Block 907, the process determines the selected route. The route is selected by the user through scrolling of an icon across a map display. The locations corresponding to the map locations form
30 the route selected by the user. In alternative embodiments, the PCD determines the route using the standard algorithms known in the art based on the starting point/ending point calculations. In further alternative embodiments, the PCD provides a server a starting point and an ending point, and the server determines the
35 route. The server then provides route information to the PCD.

1 In Block 909 the process determines a series of locations
corresponding to locations along the selected route. Once the
process has determined the locations corresponding to locations
along a selected route the process proceeds to Block 910, in
5 which the process, as previously described, retrieves and stores
data into the database.

If in Block 901 the process determines that the select area
method has been selected, the process proceeds to Block 911. In
Block 911 the process determines the selected area. The area is
10 selected by the user through use of a click and drag box on a map
display. The process also determines locations corresponding to
those within the click and drag box. The process then proceeds
to Block 913. As previously described with respect to previously
discussed Blocks, in Block 913 the process receives information
15 regarding locations corresponding to the selected area, and
stores the information in the database. The process then returns.

FIG. 10 illustrates a display screen showing a navigation
page of the present invention. The display screen provides an
20 indication of the selected profile 1011, which as illustrated is
a San Diego(SD) vacation profile. The screen display also
includes a map display 1013. The map display includes a current
destination D1 and a final destination D2. The map display also
includes an indication of items 1015a-c from the favorite menu
25 within the map display.

The display also includes selection boxes for determining
a method of transportation 1017. The embodiment described eight
methods of transportation are selectable. The eight methods of
transportation are by foot (PED), by air, by water, by rail, by
30 highway, by subway, by bike and by horse. The method of
transportation effects both routes and time of travel. For
example, subways have specific locations from which one may
ingress and egress, and those locations must be taken into
account when route selection occurs. In addition, the method of
35 transportation also affects travel time. For example, traveling

1 from one place to another by foot is likely, depending on
traffic, to take longer than travel by car.

In one embodiment in the present invention, route selection
is also affected by the use of road blocks. Road blocks are
5 locations, selected by the user, which are to be avoided in the
selection of many routes. Road blocks may be selected by the
user, for example, to avoid areas the user, through personal
preference or knowledge, wishing to avoid. For example, a user
may desire to avoid certain intersections known the user to
10 present particular difficulties with travel. Road blocks may also
be selected by the user to avoid areas which the user may believe
to present danger to the user or the user's property. These areas
may be areas of high crime, construction zones, or even areas
which are known to the user to present dangerous road driving
15 conditions. In addition, for an automatically selected route, in
one embodiment of the invention the user is provided the
opportunity to place road blocks along the selected route.

Road blocks are illustrated in FIG. 11. FIG. 11 illustrates
a user road blocks display screen. The user road blocks display
20 screen includes an automatically selected route to the first
destination D1 and a final destination D2. The automatically
selected route is indicated by a bold line 1111 in the map
display. Along each intersection or along the selected route a
selectable button 1113 is displayed. If the user selects the
25 button the process implements a road block at the selected
location and automatically reselects a route to avoid the road
block location.

In addition, as illustrated in FIG. 11 the user is provided
a selection box 1117 to allow selection of certain types of
30 activities more likely to impact traffic. As illustrated, the
selection include entertainment, sports, conventions and parades.
Selection of any of these items causes the process to determine,
based on information available from the Internet service
provider, whether such locations should be avoided.

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1 FIG. 12 illustrates an enroute profile setting screen. The
enroute profile setting screen provides two functions. A first
function is to allow a user to set favorite settings for any
particular profile. Accordingly, the screen includes a profile
5 pop down menu 1211 allowing selection of a particular profile.
The screen also includes button entries for categories
corresponding to those which appear in the favorite profiles.
Thus, button menus for music 1213, entertainment 1215, recreation
1217, restaurants 1219, miscellaneous 1221, shopping 1223, sports
10 1225, and services 1227 are provided. Each of the categories
allow for selection of multiple items corresponding to the
favorites of the user for the particular profile. For example,
under the restaurants categories the groupings include those for
fast food, Italian food, French food, American food, and Chinese
15 food. The user may select one or more of these groupings.

Each of the selected groupings are available for automatic
database population. For example, if a database is populated
either through simulation or through actual route travel,
database population is limited to those corresponding to
20 groupings selected via the enroute profile settings. In other
words, users are provided information relating to items which are
of interests to them along the route they expect to take. This
allows both for increased targeting of information by businesses,
which will make themselves known to individuals who may be
25 interested in their product or service, as well as allowing those
individuals to filter out information relating to businesses and
services for which they have no interest.

As additionally indicated in the screen of FIG. 12, users
may elect to turn off population of the database via a button
30 menu 1231. This allows the user to avoid excessively populating
the database in areas the user either will not return to or does
not expect to stop. Moreover, a pop down selection also is
provided in the screen of FIG. 12 to allow the user to populate
the database enroute or merely for the destination 1235.
35 Population of the database enroute allows the user to locate

1 items of interest or traveling for which the user may desire to
stop. If the user knows that the user will not stop prior to
reaching the destination, then the user may elect the destination
button and thereby only be provided information regarding the
5 users destination.

FIG. 13 illustrates a screen used by the user to tag a
location. The tag location screen allows the user to populate
a database based on either current location or an address located
on their map. The tag location screen is used when the user is
10 either at a location or knows of a location for which the user
desires the information entered into the database. The tag
location screen is also provided when the user is populating the
database via the stop method, and the user has additional
information desired to be entered. This may occur for example,
15 when a particular business is not provided information to the
ISP, but the user wishes information provided by way of the user
entry into the database.

FIG. 14 illustrates a block diagram of a central music
system. A central music system 1411 is a computerized system
20 including a processor and memory. The central music system
additionally includes a modem for communication over a telephone
network. In other embodiments, as those skilled in the art will
recognize, the modem may be replaced by a network interface card
(NIC) or a cable modem, or other similar devices depending on the
25 communication transport system.

The memory stores information in digital form, including
audio files. Audio files are files which, when decoded by a
suitable player, form an audio output stream which may be the
reading of a book or, for example, music. The audio files store
30 music in a variety of formats. These formats include .MP3 files,
.wav files, .aud files, and the like. An .MP3 file is a
compressed audio file. The audio files are obtained by
transferring the audio files from an external system to the
central music system. This may be done via a CD-ROM or disk
35 reader, or by using the communication modem or the like to

1 download information representing the audio files from the Internet.

In an alternative embodiment, the central music system is a central entertainment system. The central entertainment system is provided visual files and audio visual files in addition to sound files.

Once the audio file is loaded into the central music system, the central music system makes the audio file available to remote nodes. As illustrated in FIG. 14, the remote nodes include an automobile 1413, a first home system 1415, and a second home system 1417. The central music system transfers the music files to the requesting remote node on request. As illustrated, the first home system and the second home system are connected to the central music system via a physical link. The automobile, however, is connected to the central music system via a cellular phone.

The central music system transmits the audio file to the requesting node in the format requested by the requesting node. For example, the first home system may require audio files of a first type and the second home system may require audio files of a second type. Further, the automobile sound system may require audio files of yet a third type. The audio files stored on the central music system, however, may be of yet a fourth type. Thus, the central music system includes a file translation program. The file translation program converts audio files from one file format to another.

FIG. 15 illustrates a process of using the central music system. In block 1511 the central music system downloads or installs an audio file. This occurs in the case of a download by downloading the audio file from another computer system, such as accomplished by downloading from the Internet. Audio files may also be installed onto the central music system through use of a disk or CD-ROM drive.

In block 1513 a central music system organizes the audio files. The organization of audio files is accomplished at the

1 direction of a user. For example, the user may link audio files
such that a request for a first audio file will additionally
inform the music system that a second audio file should follow
the first audio file.

5 In block 1515 the central music system processes a request
for an audio file. In processing the request for the audio file
the central music system determines which audio file has been
requested, as well as any linked audio files additionally
requested.

10 In block 1517 the central music system determines if any of
the audio files require translation to a different format. If
translation of audio files from one format to another format is
required the process proceeds to block 1519. In block 1519 the
process translates the audio files. After performing any
15 operations relating to translation, the process proceeds to block
1521 and provides the audio files, in the proper format, to the
requesting node.

Accordingly, the present invention provides a computer
navigation and media control center. Although these inventions
20 have been described in certain specific embodiments many
additional modifications and variations would be apparent to
those skilled in the art. It is therefore to be understood that
this invention may be practiced otherwise than as specifically
described. Thus, the present embodiments of the inventions
25 should be considered as illustrative and not restrictive, the
scope of the inventions to be indicated by claims and their
equivalents supported by this application rather than the
foregoing description.

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